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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,258	09/30/2003	Seung H. Kang	AYUKAWA 1-4-1-162-30	4017
47396	7590	09/30/2008	EXAMINER	
HITT GAINES, PC LSI Corporation PO BOX 832570 RICHARDSON, TX 75083			LOUIE, WAI SING	
			ART UNIT	PAPER NUMBER
			2814	
			NOTIFICATION DATE	DELIVERY MODE
			09/30/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

doctet@hittgaines.com

Office Action Summary

Application No.

10/675,258

Applicant(s)

KANG ET AL.

Examiner

Wai-Sing Louie

Art Unit

2814

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 48-53 and 55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 48-53 and 55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The argument in the pre-appeal brief is persuasive and the finality of previous rejection is withdrawn. The case is re-open and the following is a new ground of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 48-53 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (US 6,798,073) in view of Honeycutt et al. (US 6,331,482).

With regard to claim 48, Lin et al. disclose an integrated circuit device (col. 6, line 50 et seq. and fig. 4) comprising:

- A metallization interconnect system overlying a semiconductor substrate 410, the metallization interconnect system including at least a first and second interconnection feature 422 and 442 located within a dielectric layer 420 and 440 (col. 9, lines 45-67);
- A power bus 442b located over the metallization interconnect system, the power bus 442b, and further where the power bus 442b includes a first contact pad region 447 configured for external connection to the integrated circuit device (fig.

- 4) that is in contact with the first interconnect feature 422, and a second region 442a in contact with the second interconnect feature 442a (fig. 4);
- A passivation layer 440 overlying at least a portion of the power bus 442b to expose at least a portion of the first contact pad 447 and protect the second region 442a (fig. 4);
 - Lin et al. disclose the power bus 442b is copper (col. 7, line 62), but do not disclose the power bus comprising an alloy of copper. However, Honeycutt et al. disclose the preferred metallization is aluminum-copper alloy (Honeycutt col. 3, line 65 and col. 7, line 45). Honeycutt et al. teach the aluminum-copper alloy provides high electromigration resistance, which enhances the reliability and electrical conduction of interconnect structure (Honeycutt col. 7, lines 45-49). Therefore, it would have been obvious at the time the invention was made to modify Lin's device with the teaching of Honeycutt et al. to provide an alloy of copper in order to enhance the reliability and electrical conduction of interconnect structure.

With regard to claims 49-50, Downey et al. disclose:

- A plane of an upper surface of the first contact pad region 1547 is not coplanar with a plane of an upper surface of the second region 1546 (fig. 5).
- The plane of the second region 846 is above the plane of the first contact pad region 829 (fig. 8).

The change in pad and contact region location is held as rearrangement of parts.

Rearrangement of parts was held to have been obvious for a person having ordinary skill in the art. In re Japikse 86 USPQ 70 (CCPA 1950).

With regard to claim 51, Lin et al. disclose the first contact pad region is configured for connection external to the device by a bond wire attached directly (col. 9, lines 41-44).

With regard to claim 52, Lin et al. disclose the first contact pad region is configured for connection external to the device by a solder bump attached directly (col. 10, lines 30-37).

With regard to claim 53, Lin et al. disclose the metallization interconnect system 580 comprises copper (see power bus 242 col. 7, lines 61-63) and further including a barrier material 560 located between the metallization interconnect system 527 and the power bus 580 in regions where the first contact pad region 547 contacts the first interconnect feature 526 and the second region 511 contacts the second interconnect feature (fig. 17a).

With regard to claim 55, Lin et al. disclose the metallization interconnect system further comprises substantially horizontal conductive runner 526 and substantially vertical conductive vias 528 interconnecting overlying and underlying conductive runners 526 (fig. 9).

Response to Arguments

Applicant's arguments with respect to claims 48-53 and 55 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is 571-272-1709. The examiner can normally be reached on 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wai-Sing Louie/
Primary Examiner, Art Unit 2814

Wsl
September 24, 2008.